REMARKS

Upon entry of the instant amendment, claims 1-5, 7, and 9-13 are pending. Claims 1, 5, 7, 9, and 13 have been amended to more particularly point out Applicants' invention.

Claims 1, 9, and 13 have been rejected under 35 U.S.C. §102(e) as being anticipated by Olafsson et al., U.S. Patent No, 6,317,419 ("Olafsson"). In order for there to be anticipation, each and every element of the claimed invention must be present in a single prior reference. Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Olafsson.

As discussed in the Specification, prior echo cancellation system typically do not compensate for multiple far end echo sources. The present invention, however, provides a system and method for determining and compensating for far end echo sources and, in certain embodiments, multiple sources.

Thus, a modem according to one implementation of the present invention includes an echo canceller adapted to determine locations of multiple far end echo sources. A training signal at a predetermined modem training frequency is sent from the modem to the second modem in the link. The return signal is then sampled by the sending modem. Any far end echoes manifest themselves as sine waves at the modem training frequency, delayed in time. The time difference between the peak of the training signal and the echo signals is used to determine the echo delay. The echo delay is then used to compensate for the echo when transmissions occur.

Thus, claim 1 has been amended to recite "a signal detector adapted to receive a signal, the signal including a data component and a plurality of-echo components, said plurality of echo components comprising a plurality of far end echo components, said data component comprising a return signal from a remote modem;" claim 9 has been amended to recite "identifying delays of a plurality of far end echo components;" and claim 13 has been amended to recite "detecting a return signal, said return signal comprising said training signal and a plurality of far end echo components;

compensating for said plurality of far end echo components at said local modem."

In contrast, Olafsson does not appear to relate to identifying a plurality of echo components, i.e., multiple echo paths, or include a timing unit for such a purpose. Instead, Olafsson provides a single echo path 322 and appears primarily concerned with "digital impairments" in the echo path, not the echo components themselves. These digital impairments relate to corruptions in the encoded bits, i.e., "robbed bit signaling" and the like. The "learn digital impairment unit" 324 thus analyzes the digital impairments and does not determine a time delay between a primary signal and a plurality of far end echo signals, as generally recited in the claims at issue. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection.

Claims 1, 9, and 13 have been rejected under 35 U.S.C. 102(e) as being unpatentable over Tal et al., U.S. Patent No. 5,909,384 ("Tal"). In order for there to be anticipation, each and every element of the claimed invention must be present in a single prior reference. Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Tal. Tal provides for dynamically adapting the length of a filter to correct for far end echo; Tal does not appear, however, to provide for identifying a plurality of far end echo sources; the echo appears to be assumed to already exist. That is, Tal appears to provide for optimizing a filter to filter known echo, rather than determining the existence of multiple echo components and their associated delays, as generally recited in the claims at issue.

Claims 2-5, 7, and 10-12 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Olafsson in view of Knittle et al., U.S. Patent No. 5,761,638 ("Knittle"). Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Olafsson or Knittle, either singly or in combination. Olafsson has been discussed above. Knittle is relied on for allegedly teaching determining a time delay by measuring an elapsed time between "the original chirp signal [a square pulse] and the occurrence of the largest peak in the sin (x)/x [a sinc function] pattern..."

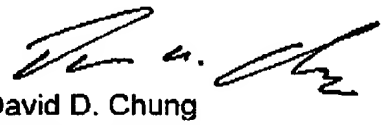
Claim 5 has been amended to recite "identifying echoes by determining delays between peaks of said return training sinusoid and peaks of said plurality of far end

echo signals;" and claim 7 has been amended to recite "means responsive to said receiving means for identifying echoes by determining delays between peaks of said return training sinusoid and peaks of said plurality of far end echo signals."

As discussed above, Olafsson does not determine a time delay between a primary signal and a plurality of far end echo signals, as generally recited in the claims at issue Applicants further note that each of the claims at issue recites a "sinusoid" or a "training sinusoid." In contrast, Knittle provides merely a chirp signal, which is filtered to the sinc function. Knittle does not relate, however, to providing training sinusoids for delay detection, as generally recited in the claims at issue. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection.

For all of the above reasons, Applicants respectfully submit that the application is in condition for allowance, which allowance is earnestly solicited.

Respectfully requested,

By: 

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